



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/854,759	05/14/2001	Michael B. Ball	4589US (99-1151)	8899
24247	7590	04/14/2004		
TRASK BRITT P.O. BOX 2550 SALT LAKE CITY, UT 84110			EXAMINER HARAN, JOHN T	
			ART UNIT 1733	PAPER NUMBER
DATE MAILED: 04/14/2004				

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/854,759

Applicant(s)

BALL ET AL.

Examiner

John T. Haran

Art Unit

1733

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 March 2004.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,4,6-13,15,17-23,25,27-33,35,37-45,47,49-51,53,55,56 and 76-84 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,4,6-13,15,17-23,25,27-33,35,37-45,47,49-51,53,55,56 and 76-84 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 14 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 3/01/04 has been entered.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

Art Unit: 1733

3. Claims 1, 2, 4, 6, 9, 23, 25, 27, 30, 33, 35, 37, 40, 43, 44, 45, 47, 49, 51, 53, and 55 are rejected under 35 U.S.C. 102(e) as being anticipated by Miyamoto et al (U.S. Patent 6,342,434).

Miyamoto et al discloses a method for thinning and dicing a wafer wherein the wafer has a surface with bumps that is covered by an adhesive tape with an adhesive coated on a backing such that the adhesive conforms to the shape of the bumps and the backing remains planar, the wafer is mounted on a vacuum suction table such that the backing of the tape abuts the vacuum table and is held against it by suction, the other side of the wafer is then thinned to remove some of the wafer material while be held to the vacuum suction table, after thinning the adhesive tape is removed from the wafer, and then the wafer is diced into individual chips (Column 18, line 7 to Column 19, line 22). Miyamoto et al anticipates the claims.

Regarding claim 9, 30, and 40, Miyamoto et al teaches thinning the wafer to 50 um (approximately 2 mil).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 7-13, 15, 17-22, 28-32, 38-42, 50, and 56 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (U.S. Patent 6,342,434).

Miyamoto et al is relied upon for the teachings noted above.

Art Unit: 1733

Regarding claim 12, Miyamoto et al is silent towards applying the adhesive to the bumped wafer surface and then applying the backing to the adhesive, however Miyamoto et al does teach applying a resist to the bumped surface and then applying a backing to the resist (Column 17, line 60 to Column 18, line 6). Additionally, one skilled in the art would have readily appreciated that it is well known and conventional when providing a backing to an adhesive member that either the adhesive is applied to an object first and then the backing is applied or the adhesive is applied to the backing and then the adhesive is applied to an object. The two are alternative expedients and are obvious one over the other. It would have been obvious to one of ordinary skill in the art to provide the adhesive to the active surface of the wafer and then apply the backing in the method of Miyamoto et al.

Regarding claims 7-9, 18-20, 28-30, 39-40, 50, and 56, one skilled in the art would have readily appreciated that the original and final thickness of the wafer would depend upon the source material and the ultimate use of the wafer and that one skilled in the art would have been capable of adjusting the method of Miyamoto et al to thin any given thickness wafer to any given desired thickness. It would have been obvious to one of ordinary to have a wafer with an original thickness of at least 12 mil and to thin it to about 6 mils or below in the method of Miyamoto et al.

Regarding claims 10-11, 21-22, 31-32 and 41-42, one skilled in the art would have readily appreciated that grinding and chemical-mechanical polishing are well known and conventional techniques for thinning wafers, as shown for example in

Art Unit: 1733

Miyamoto et al (Column 1, lines 24-25). It would have been obvious to use conventional methods for thinning a wafer.

6. Claims 76-84 are rejected under 35 U.S.C. 103(a) as being unpatentable over Miyamoto et al (U.S. Patent 6,342,434) in view of Satoh (U.S. Patent 6,338,980).

Miyamoto et al is relied upon for the teachings noted above and is silent towards the adhesive tape only contacting 10% to 60% of the surface area of the bumps and rather teaches the adhesive contacting the entire exposed surface area of the bumps (Column 18, lines 14-18). However one skilled in the art would have readily appreciated that contact with the entire exposed surface area of the bumps is not necessary as suggested in Satoh. Satoh teaches applying an adhesive tape to a bumped surface of a wafer wherein the adhesive only contacts 10% to 60% of the surface area of the bump and then mounting the tape to a vacuum suction table to hold the wafer while the opposite surface is thinned (See Figure 1C; abstract; Column 3, lines 27-50; and Column 6, lines 10-17). It would have been obvious to one of ordinary skill in the art at the time the invention was made that attaching the adhesive to 10% to 60% of the surface area of the bumps results in sufficient adhesion for the thinning process in the method of Miyamoto et al as suggested in Satoh.

Regarding claims 80-82, one skilled in the art would have readily appreciated that the original and final thickness of the wafer would depend upon the source material and the ultimate use of the wafer and that one skilled in the art would have been capable of adjusting the method of Miyamoto et al to thin any given thickness wafer to any given

Art Unit: 1733

desired thickness. It would have been obvious to one of ordinary to have a wafer with an original thickness of at least 12 mil and to thin it to about 6 mils or below in the method of Miyamoto et al.

Regarding claims 83-84, one skilled in the art would have readily appreciated that grinding and chemical-mechanical polishing are well known and conventional techniques for thinning wafers, as shown for example in Miyamoto et al (Column 1, lines 24-25). It would have been obvious to use conventional methods for thinning a wafer.

Response to Arguments

7. Applicant's arguments with respect to the claims have been considered but are moot in view of the new ground(s) of rejection.

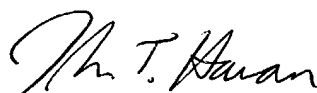
Conclusion

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to **John T. Haran** whose telephone number is **(571) 272-1217**. The examiner can normally be reached on M-Th (8 - 5) and alternate Fridays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Richard Crispino can be reached on (571) 272-1226. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Art Unit: 1733

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A handwritten signature in cursive script, appearing to read "John T. Haran".

John T. Haran
Examiner
Art Unit 1733